

EXPERIMENTAL DESIGN FOR CMIP6: AEROSOL, LAND USE, AND FUTURE SCENARIOS

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Aspen, CO

Workshop Organizing Committee:
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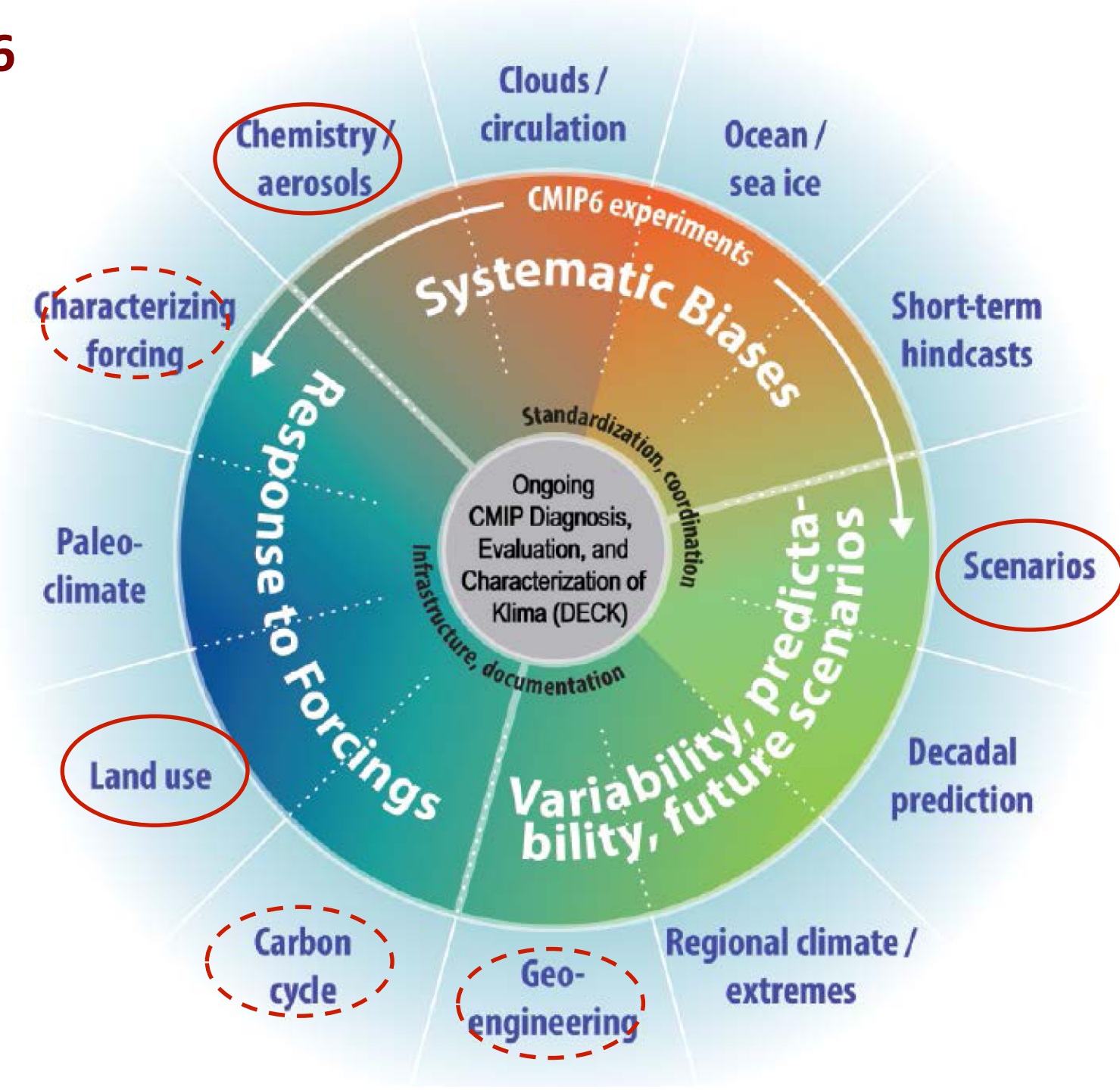
Meeting goals

- Coordinate the experimental designs of Model Intercomparison Projects on Scenarios (ScenarioMIP), Land Use (LUMIP), and Aerosols and Atmospheric Chemistry (AerChemMIP) in order to most efficiently address scientific issues of common interest.
- This meeting will lead directly to the submission of proposals from each MIP to the CMIP panel.
- It will also aim to develop common understanding of the goals of each MIP and the state of knowledge on common scientific issues, and develop plans for continuing interaction across MIPs.

How we got here

- Snowmass 2013 First thoughts on scenarios for CMIP6
- AGCI 2013 – CMIP/CMIP6 structure – ScenarioMIP/LUMIP
- WGCM17 – ScenarioMIP solidified
- Breckenridge 2014 First exchange of progress reports among the three MIPs
- Snowmass 2014 ScenarioMIP session with LUMIP + AerChemMIP input for feedback from IAM/IAV community

CMIP6



CMIP6 and Scientific Questions

Main criteria for endorsement of a MIP

- The MIP addresses at least one of the key **science questions** of CMIP6

CMIP6 science questions

WCRP Grand Challenges: clouds, circulation, and climate sensitivity; changes in cryosphere; climate extremes; regional climate information; regional sea level rise; water availability; biospheric forcings and feedbacks

How does the Earth system respond to forcing?

What are the origins and consequences of systematic model biases?

How can we assess future climate changes given climate variability, climate predictability, and **uncertainties in scenarios?**

CMIP6 and Scientific Questions

For each proposed experiment to be included in CMIP6:

- the experimental design,
- the **science question and/or gap** being addressed with this experiment,
- possible **synergies with other MIPs**,
- **potential benefits of the experiment** to (A) climate modeling community, (B) Integrated Assessment Modelling (IAM) community, (C) Impacts Adaptation and Vulnerability (IAV) community, and (D) policy makers.
- A **prioritization** of the suggested experiments including any rationale

Objectives for each MIP

ScenarioMIP: **Define and recommend an experimental design** for future scenarios to be run by climate models as part of CMIP6.

LUMIP: Improve our understanding of the **role of past and future land use**, including land management, on climate and the carbon cycle, and advancing our ability to **assess how climate change will affect future land use**.

AerChemMIP: Characterize the **climate and environmental impacts of SLCFs**.

Why meeting together?

- LUMIP and AerChemMIP are interested in exploring some realistic scenarios
- ScenarioMIP needs to use information about the effects of regional forcings to guide its choices of realistic scenarios.
- Designing experiments across MIPs may be effective.
- In the next days we will share information and coordinate our eventual proposals for experiments to CMIP6.

A very brief overview of the Agenda

- Today:
 - Veronika on CMIP/CMIP6;
 - Separate meetings of the MIPs to assess where we are;
 - Three overview talks in plenary to get all on the same page.
- Tuesday:
 - Plenary with talks and discussion on overarching and connecting science questions: sensitivity of climate to LUC and to SLCFs; scenario differences; sensitivity
 - Change in Agenda: Keywan's talk on SSP-derived IAM scenarios around the lunch break on Tuesday

- Wednesday:
 - experiments needed to investigate sensitivity of climate to LUC and SLCF;
 - Land use harmonization (ESM-IAM linkage).
- Thursday:
 - LUMIP-AerChemMIP bilateral;
 - Timeline/Process/Pragmatic aspects for future interactions among the MIPS;
 - Individual MIPS meetings to draft proposals.

- Friday:
 - MIPs present proposals for plenary discussion;
 - Wrap-up, next steps, possible products.
- But let's be flexible!!!